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10/577,277

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Leif Hermansson

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WIGGIN AND DANA LLP  
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KWAK, JAE J

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,277	<b>Applicant(s)</b> HERMANSSON ET AL.	
	<b>Examiner</b> JAE KWAK	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 11-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-28 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/17/2009, 07/24/2006</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

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## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1-10, 27-28, drawn to a system for preparing chemically bonded materials.

Group II, claims 11-20, drawn to powdered material products for dental or orthopedic applications.

Group III, claims 21-26, drawn to drawn to powdered material products comprising cement systems.

2. The inventions listed as Group II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: According to Hermansson et al US 2003/0121454 discloses special technical features such as reaction between a binding phase between powdered binding agents/materials and a liquid/hydration liquids (abstract)

3. The inventions listed as Group III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: According to Christian Dussel GB Patent 1497022 discloses special technical features such as binder of hydraulic cement and polymer resin with porous mineral filler in the aqueous solution to hydrate cement. (Page line 31-75)

4. During a telephone conversation with Todd Garabedian on March 9<sup>th</sup> 2009 a provisional

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election was made without traverse to prosecute the invention of Group I, claims 1-10, and 27-

28. Affirmation of this election must be made by applicant in replying to this Office action.

Claims 11-26 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Objections***

5. Claims 1-10, 27-28 are objected to because of the following informalities:

“Characterized in that” should be written as “wherein”. Appropriate correction is required.

6. The parentheses in instant claim 1 lines **14-18** render the claim indefinite and must be removed. It is unclear if the text within the parentheses is included in the claim and further limits the subject matter of the claim, or whether it is an aside to the claim and is not further limiting. For the purpose of further examination, it is taken that the text within the parenthesis further limits the claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-10, 27-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1: The recitation equation “ $W: W_c + W_{Glc}$ ” renders the claim indefinite because it is unclear what the units are and definition of each term must be explained in the

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claim. Furthermore, the term " $(W_C/C) + (\text{second binder phase})/(\text{reactive glass}) + W_{GIC}/(\text{reactive glass})$ " in claim 1 is a relative term which renders the claim indefinite. The term " $(W_C/C) + (\text{second binder phase})/(\text{reactive glass}) + W_{GIC}/(\text{reactive glass})$ " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purpose of further examination, examination is precluded with respect to this limitation until it is clarified.

Regarding to claims 2-8, and 28: A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 2 recites the broad recitation "kept <7", and the claim also recites "<4" or "1-3" which is the narrower statement of the range/limitation; claim 3 recites the broad recitation "system of <7", and the claim also recites "<4" or "1-4" which is the narrower statement of the range/limitation; claim 4 recites the broad recitation "pH>7", and the claim also recites "pH>10"

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which is the narrower statement of the range/limitation; claim 5 recites the broad recitation “30 minutes”, and the claim also recites “20 minutes” which is the narrower statement of the range/limitation; claim 6 recites the broad recitation “a porous material”, and the claim also recites “nano/meso-pore” which is the narrower statement of the range/limitation; claim 7 recites the broad recitation “dissolution-reducing layer”, and the claim also recites “glyconate” which is the narrower statement of the range/limitation; claim 8 recites the broad recitation “filler particles”, and the claim also recites “first binder phase” which is the narrower statement of the range/limitation; claim 28 recites the broad recitation “a porous material”, and the claim also recites “nano/meso-pore” which is the narrower statement of the range/limitation.

Regarding claim 27: Claim 27 recites the limitation "binder phase" in claim 1. There is insufficient antecedent basis for this limitation for either first phase phase (c) or second binder phase refers which renders claim indefinite.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 6, 8, 10, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. (US 2003/0121454) in view of Kato et al. (US Patent 5,520,725).

Regarding claims 1: Hermansson et al. teaches a chemically bound ceramic material/

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powdered material (abstract) by reacting binding phases/first and second binder phase of binding agents (abstract). Hermansson et al. teaches water/aqueous hydration liquid (paragraph 12) , and calcium aluminate hydrates/reactive glass (Paragraphs 12, 14) is used in the main binding phase and add aggregate/second non-ceramic binder (Paragraph 12, 14). Not taught is polyacrylic acid as aqueous hydration liquid. However, Kato et al. teaches dental glass ionomer cement compositions (abstract) with unsaturated carboxylic acid polymer/an aqueous hydration liquid (abstract) such as polyacrylic acid (Col. 11 line 16). Hermansson et al. and Kato et al. are analogous art because they are both concerned with the same field of endeavor, namely dental filling materials. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine polyacrylic acid taught in Kato et al. with the chemically bound ceramic material of Hermansson et al. and would have been motivated to do so for such desirable properties as a high strength with longevity of dental composition.

Regarding claim 6: Hermansson et al. teaches porous material such as aluminum oxide which reads on as a porous material. (Paragraph 20).

Regarding claim 8: Hermansson et al. teaches inert filler such as bonded ceramics for example hydrated aluminate (paragraph 52).

Regarding claim 10: While Hermansson et al. does not directly teach that the system yield strength above 5MPa, since all of the components are present in the composition it is implicit that the composition would have these properties. If it is applicants' position that would not be the case; (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

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Regarding Claim 27: Hermansson et al. teaches a chemically bound ceramic material/powdered material (abstract) by reacting binding phases/first and second binder phase of binding agents (abstract). Also it teaches that the cement/inorganic cement as secondary phase (Paragraph 14, 18, 20), forms moist powder material and be applied in a cavity carried out in situ. (Paragraph 35). Not taught is polyacrylate polymer However, Kato et al. teaches dental glass ionomer cement compositions (abstract) with unsaturated carboxylic acid polymer/an aqueous hydration liquid (abstract) such as polyacrylic acid (Col. 11 line 16). Hermansson et al. and Kato et al. are analogous art because they are both concerned with the same field of endeavor, namely dental filling materials. At the time of the invention a person having ordinary skill in the art would have found it obvious to combine polyacrylic acid taught in Kato et al. with the chemically bound ceramic material of Hermansson et al. and would have been motivated to do so for such desirable properties as a high strength with longevity of dental composition.

12. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. (US 2003/0121454) in view of Kato et al. (US Patent 5,520,725) as applied to claim 1 above and in further view of Jia et al. (US 2003/0125444 A1).

Hermansson et al. teach the basic claimed composition as set forth above.

Regarding claims 2-3: Not taught is initial pH of system. However, Jia et al. teaches an aqueous or organic solution of ceramic filler under acidic conditions (paragraph 39) from pH 1 to 4 (Paragraph 41). Hermansson et al. and Jia et al. are combinable because they are both concerned with the same field of endeavor, namely a dental filler composition. At the time of invention a person having ordinary skill in the art would have found it obvious to use ceramic



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filler in the chemically bonded ceramic material and would have been motivated to do so because of such desirable properties as improving bonding between ceramic fillers and polyacrylic acid.

Regarding claim 4: While Hermansson et al. does not directly teach a pH greater than 7 bases is comprised in the system, but teaches calcium aluminate is a basic material (Paragraph 18). therefore it is implicit that the composition would have these property. If it is applications' position that would not be the case; (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

13. Claims 5, 7, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. (US 2003/0121454) in view of Kato et al. (US Patent 5,520,725) as applied to claim 1 above and in further view of Ario et al. (US 2003/0114554 A1).

Hermansson et al. and Keto et al. teach the basic claimed composition as set forth above in paragraph 11.

Regarding claims 5, 7: Not taught is additional acid in the system and dissolution-reducing layer. However, Ario et al. teaches dental resin cement materials comprising acid functionality (abstract) with generate the acid (Paragraph 23) conditions such as carboxylic acids (paragraph 23). Further, Arios et al. teaches hydroxycarboxylic acid such as tartaric acid which reads on as dissolution-reducing layer that filler can be surface treated (Paragraph 34).

Hermansson et al. and Ario et al. are combinable because they are both concerned with the same

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field endeavor, namely a dental restorative cement composition comprising acid functionality.

At the time of invention a person having ordinary skill in the art would have found it obvious to use acid functional taught by Ario et al. in the chemically bonded ceramic material of Hermansson et al. and would have been motivated to do so because of such desirable properties such as acidifying intermediate dental filler compositions to improve bonding between phases and hardness of final dental cement product.

Regarding claim 28: While Hermansson et al. does not directly teach a porous material that is able to release the acid, but teaches porous material such as aluminum oxide (paragraph 52) therefore it is implicit that the composition would have these property. If it is applications' position that would not be the case; (1) evidence would need to be presented to support applicants' position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain a composition with these properties.

14. Claims 9, is rejected under 35 U.S.C. 103(a) as being unpatentable over Hermansson et al. (US 2003/0121454) in view of Kato et al. (US Patent 5,520,725) as applied to claim 1 above and in further view of Jia (US 2003/0083400 A1)

Regarding claim 9: Not taught is Zinc oxide forming Zinc Phosphate. Jia (US 2003/0083400 A1) teaches dental restorative compositions (Paragraph 12) comprising phosphoric acids (Paragraph 21) and Zinc Phosphate base cement (Table 3). Hermansson et al. and Jia are analogous art because they are both concerned with the same field endeavor, namely a dental restorative cement composition comprising multi-component system. At the time of

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invention a person having ordinary skill in the art would have found it obvious to use the Zinc Phosphate material taught by Jia 715' in the chemically bonded ceramic material system of Hermansson et al. and would have been motivated to do so because of such desirable properties such as improving mechanical strength and wear resistance of dental cement composition.

### *Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAE KWAK whose telephone number is (571)270-7339. The examiner can normally be reached on Monday to Friday 8:30 A.M. EST 5:30 P.M. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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J.K.

/Ling-Siu Choi/

Primary Examiner, Art Unit 1796